No. 8600062

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Helena Chemical Company

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT TY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT T. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'Starr'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington, D. C. *this* 28th *day of* November *in the year of our Lord one thousand nine hundred and* eighty-six.

Attest:

Kenneth A. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Richard E. Lyng
Secretary of Agriculture

R2143

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN & SEED DIVISION

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

FORM APPROVED: OMB NO. 0581-0005

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

1. NAME OF APPLICANT(S)
HELENA CHEMICAL COMPANY

2. TEMPORARY DESIGNATION
HB-507-D1-7

3. VARIETY NAME
Starr

4. ADDRESS *(Street and No. or R.F.D. No., City, State, and Zip Code)*
5100 POPLAR AVENUE CLARK TOWER SUITE 3200
MEMPHIS, TN 38137

5. PHONE *(Include area code)*
(901)761-0050

FOR OFFICIAL USE ONLY

PVPO NUMBER
8600062

6. GENUS AND SPECIES NAME
Glycine max

7. FAMILY NAME *(Botanical)*
Leguminosae

FILING
DATE
12/20/85
TIME
10:00 [X] A.M. [ ] P.M.

8. KIND NAME
Soybean

9. DATE OF DETERMINATION
November, 1976

FEES RECEIVED
AMOUNT FOR FILING
$ 1800.00
DATE
12/20/85
AMOUNT FOR CERTIFICATE
$ 200.00
DATE
September 29, 1986

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*
Corporation

11. IF INCORPORATED, GIVE STATE OF INCORPORATION
Delaware

12. DATE OF INCORPORATION
6-20-77

13. NAME AND ADDRESS OF APPLICANT REPRESENATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
Richard S. Guthrie, Jr.
c/o Helena Chemical Company
5100 Poplar Avenue Clark Tower Suite 3200
Memphis, TN 38137

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED

a. [X] Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*

b. [X] Exhibit B, Novelty Statement

c. [X] Exhibit C, Objective Description of the Variety *(Request form from Plant Variety Protection Office.)*

d. [X] Exhibit D, Additional Description of the Variety

e. [X] EXHIBIT E, OWNERSHIP STATEMENT RJS

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act.)*
[ ] Yes *(If "Yes," answer items 16 and 17 below)* [X] No

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
[ ] Yes [X] No

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
[ ] Foundation [ ] Registered [ ] Certified

18. DID THE APPLICANT(S) FILE FOR PROTECTION OF THE VARIETY IN THE U.S. OR OTHER COUNTRIES?
[ ] Yes *(If "Yes," give names of countries and dates)*
[X] No

19. HAVE RIGHTS BEEN GRANTED IN THE U.S. OR OTHER COUNTRIES?
[ ] Yes *(If "Yes," give names of countries and dates)*
[X] No

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT
Richard S. Guthrie Jr.
DATE
12-26-85

SIGNATURE OF APPLICANT
DATE

FORM LMGS-470 (9-81) (Edition of 1-78 is obsolete)

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EXHIBIT A

HELENA CHEMICAL COMPANY'S APPLICATION FOR STARR

Origin and Breeding History of the Variety.

Starr originated from the cross Davis x N68-415. N68-415 was a North Carolina breeding line. The pedigree method of breeding was employed in selecting this variety. In 1976 an F4 plant row was bulked for yield testing in 1977. Concurrent yield testing and increasing of this line, then known as experimental strain HB-507-D1-7, was carried out. Observations and rogueing were conducted in subsequent years on each increase generation.

Based on the above observances, Starr is stable for all observable characteristics.

EXHIBIT B

HELENA CHEMICAL COMPANY'S APPLICATION FOR STARR

Novelty Statement

Starr is most similar to Braxton. The principle differences between Starr and Braxton are flower color and date of maturity. Starr has white flowers and Braxton has purple flowers. Starr matures approximately five (5) days earlier than Braxton.

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TABLE B I
AVERAGE DATA FOR 14 TESTS CONDUCTED IN MISSISSIPPI, GEORGIA LOUISIANA AND SOUTH CAROLINA IN 1981, 1982 & 1983

	STARR	BRAXTON	DIFFERENCE
Flower Color 1/	W	P	Yes
Pubescence Color 2/	T	T	None
Plant Height (cm)	81.1	90.0	-8.9
Maturity Date	10-25	10-30	-5
Lodging 3/	1.2	1.3	-0.1
Metribuzin Reaction 4/	1.8	2.0	-0.2
Foliage Color 5/	2.6	1.4	+1.2
Protein Content (%)	39.2	39.7	-0.5
Oil Content (%)	20.5	19.6	+0.9
Foliar Feeding Insect 6/	1.4	1.2	+0.2
Stink Bug Damage 7/	1.4	1.3	+0.1
Weight gm/100 Seed	12.5	13.3	-0.8
Seed Quality Rating 8/	1.7	1.7	None
Seed Coat Luster 9/	4.0	3.3	+0.7
Seed Coat Color 10/	3.6	2.9	+0.7
Hilum Color	BL.	BL.	None

1/ P = Purple
W = White

2/ T = Tawny
G = Gray

3/ 1 = No Lodging
5 = Severe Lodging

4/ 1 = Very Tolerant
5 = Plants Killed

5/ 1 = Very Light Green
5 = Very Dark Green

6/ 1 = No Feeding
5 = Completely Skeletonized

7/ 1 = No Seed Damage
5 = Severe Seed Damage

8/ 1 = Very Good Quality
5 = Very Poor Quality

9/ 1 = Very Shiny
5 = Very Dull

10/ 1 = Deep Yellow
5 = Light Yellow

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TABLE B I 1
AVERAGE DATA FOR 8 TESTS CONDUCTED IN MISSISSIPPI, GEORGIA SOUTH CAROLINA AND LOUISIANA IN 1983

	STARR	BRAXTON	DIFFERENCE
Flower Color 1/	W	P	Yes
Pubescence Color 2/	T	T	None
Plant Height (cm)	72.9	78.9	-6.0
Maturity Date	11-1	11-4	-3
Lodging 3/	1.1	1.2	-0.1
Protein Content (%)	37.6	37.1	+0.5
Oil Content (%)	21.1	20.5	+0.6

1/ P = Purple
W = White

2/ T = Tawny
G = Gray

3/ 1 = No Lodging
5 = Severe Lodging

8600062

FORM APPROVED – OMB NO. 0581-0058

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Soybean)

OBJECTIVE DESCRIPTION OF VARIETY

SOYBEAN *(GLYCINE MAX)*

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)
HELENA CHEMICAL COMPANY

ADDRESS *(Street and No., or R.F.D. No.; City, State, and ZIP Code)*
5100 POPLAR AVENUE CLARK TOWER SUITE 3200
MEMPHIS, TN 38137

FOR OFFICIAL USE ONLY

PVPO NUMBER 8600062

VARIETY NAME OR TEMPORARY DESIGNATION STARR RJS

Place the appropriate number that describes the varietal character of this variety in the boxes below.

1. SEED SHAPE: [1] 1 = SPHERICAL 2 = SPHERICAL FLATTENED 3 = ELONGATE 4 = OTHER *(Specify)*

2. SEED COAT COLOR: [1] 1 = YELLOW 2 = GREEN 3 = BROWN 4 = BLACK 5 = OTHER *(Specify)* **SHADE:** [2] 1 = LIGHT 2 = MEDIUM 3 = DARK

3. SEED COAT LUSTER: [1] 1 = DULL 2 = SHINY

4. SEED SIZE [1][3] GRAMS PER 100 SEEDS

5. HILUM COLOR: [6] 1 = BUFF 2 = YELLOW 3 = BROWN 4 = GRAY 5 = IMPERFECT BLACK 6 = BLACK 7 = OTHER *(Specify)* **SHADE:** [2] 1 = LIGHT 2 = MEDIUM 3 = DARK

6. COTYLEDON COLOR: [1] 1 = YELLOW 2 = GREEN

7. LEAFLET SIZE *(See Reverse)*: [2] 1 = SMALL 2 = MEDIUM 3 = LARGE

8. LEAFLET SHAPE: [1] 1 = OVATE 2 = OBLONG 3 = LANCEOLATE 4 = ELLIPTICAL 5 = OTHER *(Specify)*

9. LEAF COLOR *(See reverse)*: [2] 1 = LIGHT GREEN 2 = MEDIUM GREEN 3 = DARK GREEN

10. FLOWER COLOR: [1] 1 = WHITE 2 = PURPLE 3 = OTHER *(Specify)*

11. POD COLOR: [1] 1 = TAN 2 = BROWN 3 = BLACK

12. POD SET: [1] 1 = SCATTERED 2 = CONCENTRATED

13. PLANT PUBESCENCE COLOR: [2] 1 = GRAY 2 = BROWN 3 = OTHER *(Specify)* **SHADE:** [2] 1 = LIGHT 2 = MEDIUM 3 = DARK

14. PLANT TYPES *(See Reverse)*: [2] 1 = SLENDER 2 = BUSHY 3 = INTERMEDIATE

15. PLANT HABIT: [1] 1 = DETERMINATE 2 = INDETERMINATE 3 = OTHER *(Specify)*

16. HYPOCOTYL COLOR: [1] 1 = GREEN 2 = PURPLE

17. SEED PROTEIN: [-] 1 = A 2 = B

18. NUMBER OF DAYS TO FLOWERING *(Place a zero in first box (e.g. [0][9]) when days are 9 or less.)* [-][-]

19. MATURITY GROUP: [9] 1 = 00 2 = 0 3 = I 4 = II 5 = III 6 = IV 7 = V 8 = VI 9 = VII 10 = VIII

20. SIZE OF 10 DAY OLD SEEDLING GROWN UNDER CONSTANT LIGHT *(Growth Chamber)* **AT 25° C.** *(Place a zero in first box (e.g. [0][2]) when size is 9 mm. or less.)*

[-][-][-] MM. LENGTH OF SEEDLING

[-][-] MM. LENGTH OF COTYLEDON

[-][-] MM. WIDTH OF COTYLEDON

21. DISEASE: *(Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)*

[0] BACTERIAL PUSTULE	[0] SOYBEAN CYST	[0] DOWNY MILDEW	[0] PURPLE STAIN	[0] POD AND STEM BLIGHT	[0] ROOT KNOT
[0] FROGEYE	[0] STEM CANKER	[0] PHYTO-PHTHORA	[0] BROWN STEM ROT	[0] TARGET SPOT	[0] BROWN SPOT
[0] BUD BLIGHT	[0] WILDFIRE	[0] RHIZOCTONIA ROT	[0] OTHER *(Specify)*		

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FORM LPGS-470-2 (1-81) (Edition of 5-78, may be used.)

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant shape	Braxton	Petiole angle	Braxton
Leaf shape	Braxton	Seed size	Braxton
Leaf color	Davis	Seed shape	Braxton
Leaf surface	Braxton	Seedling pigmentation	Braxton

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY:

VARIETY	NO. OF DAYS TO MATURITY	LODGING SCORE	PLANT HEIGHT	LEAF SIZE		CONTENT		AVERAGE NO. OF PODS PER PLANT	IODINE NO.
				Width	Length	Protein	Oil		
Submitted	10-25	1.2	81.1	-	-	39.2	20.5 %	--	--
Name of similar variety Braxton	10-30	1.3	90.0	-	-	39.7	19.6	--	--

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for completing this form:

1. Scott, Walter O. and Samuel R. Aldrich, 1970, Modern Soybean Production, The Farmer Quarterly.
2. Norman, A. G., 1963, The Soybean: Genetics, Breeding, Physiology, Nutrition, Management.
3. McKie, J. W., and K. L. Anderson, 1970, The Soybean Book.

LEAF COLOR: Nickerson's or any recognized color fan may be used to determine the leaf color of the described variety. The following Soybean varieties may be used as a guide to identify the colors listed on the form.

COLOR	VARIETY
Light Green	"Ada"
Medium Green	"Wilkin"
Dark Green	"Swift"

LEAF SIZE: The following varieties may be used as a guide to identify the relative size leaves.

SIZE	VARIETY
Small	"Amsoy"
Medium	"Bonus"
Large	"Anoka"

PLANT TYPE: The following varieties may be used as a guide to identify the plant type.

TYPE	VARIETY
Slender	"Vansoy"
Intermediate	"Wirth"
Bushy	"Adelphia"

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EXHIBIT D

HELENA CHEMICAL COMPANY'S APPLICATION FOR STARR

Additional Description of the Variety

Starr is a group VII maturity soybean variety which matures about five (5) days earlier than Braxton. Starr has white flowers, a tawny pubescence and a tan pod wall. The leaves of Starr are ovate in shape. The foliage color is medium green. The seed coat is quite dull and the seed coat color is medium yellow. The hilum color is black. The seed of Starr (3,632 seed per pound) is slightly smaller than seed of Braxton (3,414 seed per pound). Starr (39.2%) is similar to Braxton (39.7%) in protein content. Starr (20.5%) is similar to Braxton (19.6%) in oil content. Starr (81.1 cm) is somewhat shorter in height than Braxton (90.0 cm.).

As stated above Starr has white flowers. Starr has up to one (1) plant with purple flowers in 2,000 plants. Starr has a tawny pubescence with up to one (1) plant with gray pubescence in 2,000 plants. Starr has a black hilum with up to one (1) seed in 2,000 with a color other than black.

EXHIBIT E

HELENA CHEMICAL COMPANY'S APPLICATION FOR STARR

Ownership of Variety

The soybean variety Starr is owned by Helena Chemical Company through purchase.